Ending preventable child deaths: addressing the high-risk days after birth

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As we approach the final target year for the Millennium Development Goals (MDGs), it is already clear that the world is not quite going to achieve MDG4: to reduce the child mortality rate (under 5) by two-thirds between 1990 and 2015. The most recent report of the UN Interagency Group for Child Mortality Estimation[1] has estimated that the child death rate dropped by 49% between 1990 and 2013, from 12·7 million deaths in 1990 to 6·3 million in 2013. Yet, despite an acceleration in the rate of reduction, from a global average 1·2% per annum in 1990–95 to 4·0% per year in 2005–13, progress remains insufficient to reach MDG4.

In this context, the report by Shefali Oza and colleagues in this issue of *The Lancet Global Health*[2] provides an important input to our understanding of what needs to be done to accelerate progress in ending preventable child deaths in the post-2015 era. Although the number of under-5 deaths worldwide has decreased by 49% since 1990, the neonatal mortality rate (ie, deaths within the first 28 days of life), only declined by 40%. As a result, the proportion of under-5 deaths occurring in the first month of life has increased from 37% in 1990 to 44% in 2013.[1]

A recent report by Liu and colleagues in *The Lancet*[3] identified the causes of child death that have contributed most to the reduction in child deaths worldwide. Liu and colleagues found that reductions in pneumonia, diarrhoea, and measles collectively were responsible for half of the 3·6 million fewer deaths recorded in 2013 versus 2000. In 2013, the three leading causes of under-5 deaths worldwide were preterm birth complications (0·97 million), pneumonia (0·94 million), and intrapartum-related complications (0·67 million). Two of these three causes are concentrated in the neonatal, and particularly the early neonatal, period (the first week of life).

The methods used by the Child Health Epidemiology Reference Group (CHERG) and WHO to estimate causes of child death for all countries were revised recently to model deaths separately in the early neonatal period (0–6 days) and the late neonatal period (7–27 days),[4] and the report by Oza and coauthors[2] provides important additional evidence on the distribution of deaths by day across the neonatal period, which will contribute to improved estimation of trends in neonatal causes of death.

Oza and coauthors estimate that, of the 2·76 million neonatal deaths that occurred in 2013, an estimated 36% occurred on the day of birth and 73% occurred within the first week (including day 0). In other words, one in six deaths of all children younger than 5 years, or 1·0 million deaths, occur on the day of birth. These proportions varied little between high-income countries with good death registration data and low-income and middle-income countries without usable death registration data, where the main source of information was Demographic and Health Surveys from 1986 to 2011. The main surprising finding of Oza and colleagues' paper is that, except at very low neonatal mortality levels, there is little evidence that the proportional distribution of deaths varies systematically with the neonatal mortality rate.

The leading contributors to these early neonatal deaths are preterm birth complications and intrapartum-related complications (birth asphyxia and birth trauma), together accounting for 40% of all neonatal deaths. Both of these causes of death are highly amenable to preventive and health-care interventions.[5]

Oza and coauthors highlight the lack of data on the distribution of neonatal deaths by day since birth and the considerable problems of day of death mis-statement, not only in birth history data from surveys, but also in death registration data, as well as evidence for misclassification of intrapartum stillbirths as early neonatal deaths and vice versa. Despite these issues, which limited their ability to develop country-specific age of death distributions for countries that rely on survey data, Oza and colleagues provide a convincing analysis of the worldwide risks of death in the days after birth. Further work in this area should attempt to obtain detailed tabulations of deaths by day of death from statistical agencies responsible for death registration datasets, since published data and data provided to WHO for its WHO Mortality Database rarely provide detailed tabulations beyond the early neonatal and late neonatal categories.

For the post-2015 Sustainable Development Goals, WHO and other UN agencies are discussing a goal to "end preventable child deaths"[6] with a proposed 2030 target of 25 or fewer under-5 deaths per 1000 livebirths. Achievement of this target will require acceleration of current efforts to prevent child deaths, with scale-up of existing interventions, introduction of new vaccines for pneumonia, diarrhoeal diseases, and possibly even malaria, and increased attention to reducing prematurity, preterm birth complications, and other neonatal causes of death. In this context, it will be crucial to focus increased attention on the high-risk period around and immediately after the day of birth, and to ensure that existing simple and cost-effective interventions are increasingly implemented as part of a more comprehensive approach to obstetric and improved newborn care. Improved prenatal and obstetric care will also address the incidence of intrapartum stillbirths, of which there are a similar number each year as deaths in the first few days of life.[7]

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I declare no competing interests.

1 UN Inter-Agency Group for Child Mortality Estimation. Levels and trends in child mortality: report 2014. New York: UNICEF, 2014. http://www.childmortality.org/files_v17/download/UNICEF%202014%20IGME%20child%20mortality%20Report_Final.pdf (accessed Oct 6, 2014).

2 Oza S, Cousens SN, Lawn JE. Surviving the day of birth: daily risk estimates for the neonatal period for 186 countries. *Lancet Glob Health* 2014; **2:** e635–44.

3 Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000–13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2014; published online Oct 1. http://dx.doi.org/10.1016/S0140-6736(14)61698-6.

4 WHO. CHERG-WHO methods and data sources for child causes of death 2000-2013 (Global Health Estimates Technical Paper WHO/HIS/HSI/GHE/2014.6.2). Geneva: WHO, 2014. http://www.who.int/healthinfo/global_burden_disease/ChildCOD_method_2000_2013.pdf?ua=1 (accessed Oct 3, 2014).

5 Lawn J, Blencowe H, Oza S, et al. Every Newborn: progress, priorities, and potential beyond survival. *Lancet* 2014; **384:** 189–20.

6 Open Working Group on Sustainable Development Goals. Outcome document. http://sustainabledevelopment.un.org/focussdgs.html (accessed Oct 3, 2014).

7 Cousens S, Blencowe H, Stanton C, et al. National, regional, and worldwide estimates of stillbirth rates in 2009 with trends since 1995: a systematic analysis. *Lancet* 2011; **377:** 1319–30.